IOWA HIGHWAY RESEARCH BOARD (IHRB)
Minutes of May 20, 2011

Regular Board Members Present

A. Abu-Hawash
J. Berger
D. Schnoebelen
E. Steffensmeier
R. Younie
R. Knoche
D. Ahart

Alternate Board Members Present

D. Little for V. Dumdei
S. Sritharan for J. Alleman

Members With No Representation

J. D. King
W. Weiss
J. Joiner
J. Moellering
M. Nahra
C. Schloz

Secretary - M. Dunn

Visitors

Kevin Mayberry	Mills County
Scott Schram	Iowa Department of Transportation
Rich Harris	Iowa State University
Chuck Jahren	Iowa State University
Chris Williams	Iowa State University
Michelle Scherer	The University of Iowa

The meeting was held at the Iowa Department of Transportation Ames Complex, Materials East/West Conference Room, on Friday, May 20, 2011. The meeting was called to order at 9 a.m. by Chairperson Doug Schnoebelen with an initial number of 8 voting members/alternates at the table.

Agenda
No changes were made to the Agenda.

Motion to approve Minutes from the April 29, 2011 meeting by J. Berger. 2nd by R. Younie.
Motion carried with 8 aye, 0 nay, 0 abstaining.

*** One Member Joined the Table***

FINAL REPORT TR-598, "Development of Updated Specifications for Roadway Rehabilitation Techniques,"
Chuck Jahren, Iowa State University/InTrans ($60,000)

BACKGROUND
As our nation's highway system continues to age, roadway maintenance and rehabilitation techniques have become increasingly important. The deterioration of pavement over time is inevitable. Preventive maintenance is a strategy to extend the serviceable life of a pavement by applying cost-effective treatments that slow the deterioration of pavement and extend its usable life.

OBJECTIVES

This research project investigated ways to improve Iowa Statewide Urban Design and Specifications (SUDAS) and Iowa Department of Transportation (DOT) documents regarding asphalt roadway maintenance and rehabilitation. Researchers led an effort to review and help ensure that the documents supporting proper selection, design, and construction for asphalt maintenance and rehabilitation techniques reflect the latest research findings on these processes: seal coating, slurry sealing, micro-surfacing, and fog sealing.

BENEFITS
Maintenance and rehabilitation projects can be selected, designed, and constructed more efficiently, because the targeted documents will reflect improvements recommended by recent research. Incorporation of research results in the targeted documents is an efficient method for affecting improvement, because changes in these documents usually result in a change in the standard operating procedure for TMSs. The targeted documents are concise and widely read; therefore, they are accessible to a wide audience. Since Iowa's road network is mostly established, maintenance and rehabilitation efforts will be an increasingly large proportion of future investments. Therefore, an investment that improves maintenance and rehabilitation projects is effective in providing benefits to road users and other transportation stakeholders.

Q: Are the project documents developed in previous research still accurate or do they need to be updated?
A: Those materials are still current; there is just a need to disseminate them.
Q: Are there any issues with leaching from runoff when using fog seals?
A: There is not much of an issue with this because most of the time we are dealing with emulsions, which are more environmentally friendly. If you are fog sealing with coal tar, then it might be more of a concern

Motion to Approve by R. Younie. 2nd by D. Ahart.
Motion carried with 9 aye, 0 nay, 0 abstaining.

PROPOSAL Pilot Construction Project for Granular Shoulder Stabilization, Charles Jahren, Iowa State University/InTrans ($85,920)

BACKGROUND
The shoulder edge rut mitigation research project identified applications of DUSTLOCK, a soybean oil soap stock as a possible strategy to mitigate the development of edge ruts on roadways with granular shoulders (Jahren, et al 2011). Evidence indicates that this strategy has the potential to reduce the number of required maintenance cycles on high speed high traffic roads (such as US 20 near Jessup with 9000 AADT and speed limit of 65) and last up to five years on medium speed medium traffic roads (such as US 18 near Garner 6000 AADT and speed limit of approximately 45). Pilot testing the material on roads with various levels of AADT and various shoulder conditions would provide an opportunity to better define situations where DUSTLOCK and similar materials would be useful.

OBJECTIVES
The objective of the proposed research project is to assist Iowa DOT in cost effectively mitigating edge ruts on granular shoulders by pilot testing the use of DUSTLOCK in a full scale maintenance setting and continuing to explore other alternatives such as developing standard specifications for a class of products that might have similar effectiveness and using other stabilizing strategies or paving short sections of shoulders.

BENEFITS
The results of this study are intended to allow maintenance personnel to improve the performance of granular shoulders with regard to edge ruts, with the existing complement of maintenance personnel and possible contactor assistance. This project can be evaluated in terms of the behavior of the test sections in the field and the recommendations that result from the study. If the research results in a mitigation of edge rut issues for granular shoulders, the study will be considered successful. It is anticipated that the results of this project will increase safety, and improve the procedures currently used to maintain granular shoulders in Iowa.

Q: Are you going to test varying aggregate gradations?
A: We don't currently have that in the test plan, but it would be good to look at that.
Q: Do you think that you would be able to determine the long-term performance in 12 months?
A: No. We'll look at the performance over this summer and then we can make a determination with the TAC on how to proceed.

Q: Will you be identifying and addressing the drainage issues that may be leading to edge rut issues?
A: We will be noting the drainage problem areas more carefully. We will also be looking at road profile issues as well.

Motion to Approve by J. Berger. 2nd by E. Steffensmeier.
Motion carried with 9 aye, 0 nay, 0 abstaining.

PROPOSAL Warm Mix Asphalt Phase II: Evaluation of WMA Quality Assurance Testing Protocols, Chris Williams, Iowa State University/InTrans ($174,991)

BACKGROUND
An important conclusion from Phase I found the source of the differences in mix performance may originate from how the mix was designed. All of the field projects included in the study were designed as HMA. Warm mix additives or water injection systems were simply added ad-hoc without modification to the Job Mix Formula (JMF). Similar results were found in NCHRP Project 9-43, which led to recommended mix design practices for WMA. How do the observed differences in lab performance testing translate to the field? Will JMFs designed as WMA yield similar performance as HMA, particularly for water-injection systems?

OBJECTIVES
The results of Phase I show differences between a control HMA mix and a WMA mixture. The performance testing showed statistical differences in several cases. Phase II of this study will evaluate the performance of plant-produced WMA mixtures as compared to HMA using NCHRP 9-43 recommendations. Other objectives involving curing behavior, quality assurance testing, and hybrid technologies are outlined as follows:

1. Compare the predicted and observed field performance of existing WMA trials produced in the previous Phase I study to that of HMA control sections to determine if Phase I conclusions are translating to the field.

2. Identify any curing effect (and timing of the effect) of WMA mixtures and binders in the field. Determine how the field compacted mixture properties and recovered binder properties of WMA compares to those of HMA over time for technologies common to Iowa.

3. Identify protocols for WMA sample preparation for volumetric and performance testing which best simulate field conditions.

BENEFITS
The benefits of this research are potentially utilizing green technology that will reduce HMA plant emissions via reduction in plant production temperatures as well as a reduction in plant fuel. The reduction in emissions would also reduce worker exposure to fumes during load out, placement, and compaction. WMA technology may have additional benefits in providing longer haul distances and or longer construction seasons as well as the ability to place thicker lifts. Lastly, it may also be possible to incorporate higher percentages of RAP although this will need to be carefully examined as to the effect on binder grade selection via reduced aging in production/construction of the virgin binder.

Q: How will you predict the long-term behavior of WMA?
A: We can use the models in the MDPDG knowing the material properties, and then we can look at the field performance, given the expected performance from the lab testing.
Q: What is the industry perspective on WMA?
A: They are interested due to the "green" marketing and the fuel savings associated with WMA. Contractors like the foaming methods generally over the chemical additives due to the relatively low plant modification cost (with respect to the plant cost) and then they are not beholden to a particular chemical supplier. Chemical additives do allow for a lower plant temperature and can also act as an anti-strip agent however, so there are some benefits to them as well. There will likely be some hybrid technologies in the future.

Motion to Approve by R. Younie. 2nd by R. Knoche.
Motion carried with 9 aye, 0 nay, 0 abstaining.

NEW BUSINESS

The first County Engineer Focus Group meeting was held May 11th, 2011to discuss county road issues. Approximately 50 people attended to discuss county road issues and possible research projects. Once the meeting report is finalized, we will be brining some of those issues identified forward through the IHRB.

ADJOURN
Motion to Adjourn by J. Berger. 2nd by D. Ahart.
Motion carried with 9 aye, 0 nay, 0 abstaining.

The next meeting of the Iowa Highway Research Board will be held Friday, July 29, 2011, in the East/West Materials Conference Room at the Iowa DOT. The meeting will begin promptly at 9 a.m.

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Mark J. Dunn, IHRB Secretary